Asemptomatik Nadir Kosta Anomalileri: Bifid Kosta ve Kosta Füzyonu

Asymptomatic Rare Rib Anomalies: Bifid Rib and Rib Fusion

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Bu çalışma, Toraks Derneği 11.Yıllık Kongresinde (23-27 Nisan 2008, Belek/Antalya) sunulmuştur.

Özet

Akciğer grafisinde kostaların dikkatli gözlenmemesi yüzünden çeşitli varyasyonlar ve patolojik durumlar gözden kaçabilmektedir. Kostaları ilgilendiren konjenital anomaliler ve deformiteler arasında iki veya daha fazla kostada füzyon görülmesi, iki kosta arasında köprüleşme olması ve bifid kostalar sayılabilir. Bu yazıda kosta füzyonlarına ve bifid kosta anomalisine üç örnek verilmiştir. İlgili anomaliler başka bir sebepten çekilen akciğer grafilerinde tesadüfen saptanmıştır. Kostaları ilgilendiren sayısal ve yapısal anomaliler tek başlarına olabildikleri gibi konjenital sendromların parçaları da olabilirler. Yanlış patolojik tanıların önüne geçmek için radyologlar ve göğüs duvarı ile ilgilenen doktorların bu tür nadir varyasyonları akıllarında tutmaları gereklidir.

Anahtar Kelimeler

Kas-İskelet Sistemi Anormallikleri, Kostalar, Torasik Radyoloji

Abstract

A variety of normal variants or pathologic conditions of the ribs are overlooked at chest radiography if they are not evaluated carefully. There are various types of congenital anomalies and deformities of the ribs, including developmental fusion of two or more ribs, articulation or bridge formation between two ribs, and bifid rib. Three rare asymptomatic cases of bifid ribs and rib fusion have been presented in this case report. These anomalies were detected incidentally, after a chest X-ray taken for other reasons. These numerical and structural rib abnormalities may occur in isolation or with other congenital anomalies. Radiologists and clinicians dealing with osseous thorax should be familiar with normal variants of the ribs to avoid mistaking them for an abnormality.

Keywords

Musculoskeletal Abnormalities, Ribs, Thoracic Radiography

DOI: 10.4328/JCAM.10.1.22 **Received:** 30.06.2009 **Accepted:** 13.07.2009 **Printed:** 01.01.2010 J.Clin.Anal.Med. 2010;1.1:47 - 49
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Introduction

The ribs are the essential components of the osseous thorax, and there are some normal variants or pathologic conditions related to them. These conditions may be missed easily if the ribs are not evaluated carefully on chest X-rays [1, 2]. Among these normal variants are developmental fusion of two or more ribs, articulation or bridge formation between two ribs, and bifid ribs [1]. As low as 2% of the individuals may have such numerical and structural rib abnormalities. Since a rib fusion or bifid ribs may occur as isolated findings or with other congenital anomalies, people interpreting chest X-rays should be familiar with them in order to distinguish these anomalies from true rib diseases [2, 3]. In this report, I presented some cases concerning with these rare anomalies such as bifid rib and rib fusion.

Case Reports

Case 1

A nine-year-old boy accompanied by his parents, admitted to the outpatient clinic with a complain of a mild chest pain on the left side following a minor fall from a chair. The pain did not radiate, and there was not any respiratory distress. The chest examination revealed a minimal discomfort to light and deep palpation which was localized to the posterior axillary line, and there wasn't any surrounding ecchymosis or bony crepitation. A chest radiograph detected no fracture or any obvious soft tissue injury, but the graphy showed a bifid third rib on the left side (Figure 1).

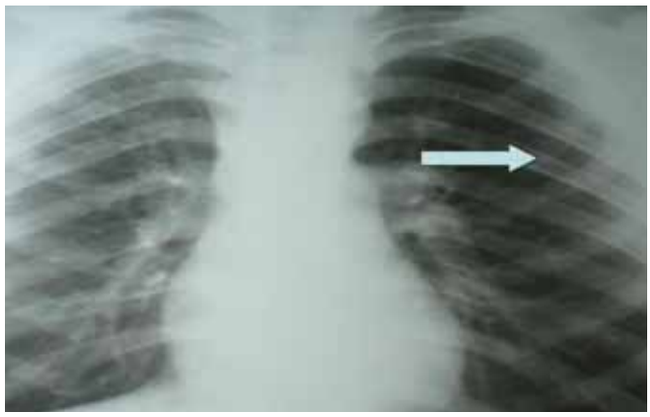

Figure 1. Chest X-ray of the third patient revealed fusion of the first and second rib on the right side (white arrows). The widening of the first rib is due to the fusion with the second rib, and there is not an intercostal space between the ribs.

It was concluded that this finding was a normal anatomic variant, and the patient was discharged with instructions to take an analgesic and anti-inflammatory drug as needed for pain.

Case 2

A nineteen - year - old soldier underwent a routine chest radiography during a survey for the tuberculosis. The chest X-ray showed bifid fifth rib on both sides (Figure 2). The physical examination was unremarkable, and there was no past history of any serious disease.

Case 3

A twenty-year-old soldier was evaluated for a mild pain in the left lateral chest wall, which began after a fall from of about one meter from a wall. The pain was not associated with any respiratory distress. There was no bony crepitation or ecchymosis in the physical examination, but the patient had mild pain on deep palpation on the left midaxillary line. A chest X-ray did not revealed any fracture or soft tissue injury, but showed a fusion of the first and the second rib on the right side (Figure 3). The patient had no past history of any disease. He was prescribed an analgesic and anti-inflammatory drug for the pain.

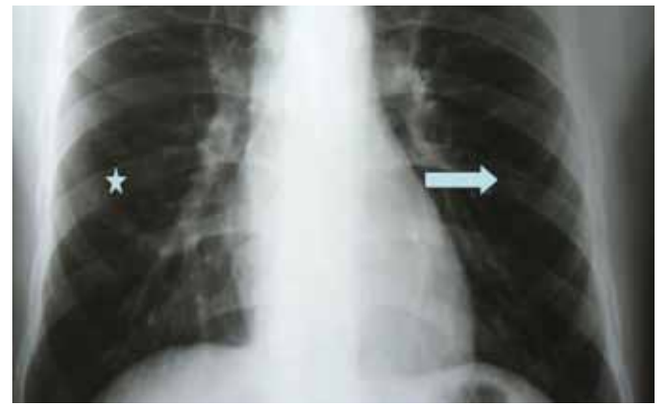

Figure 2. Bilateral bifid fifth ribs detected in the chest X-ray of the second patient. White arrow shows a bifid fifth rib on the left, and star shows a bifid fifth rib on the right.

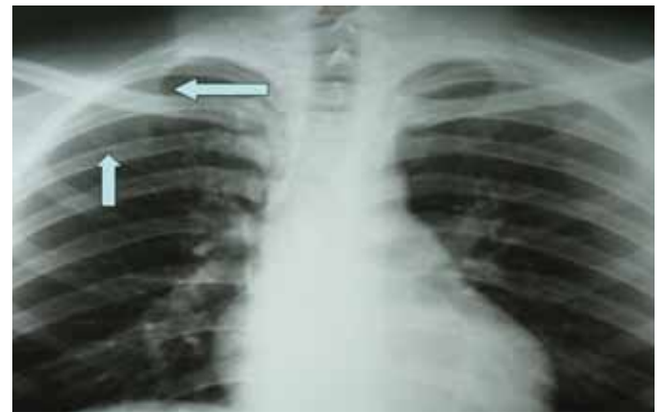

Figure 3. Chest X-ray of the first patient showing left bifid third rib (white arrow).

Discussion

A careful examination of the ribs may reveal pathologic conditions of the ribs themselves, the evidence of systemic diseases, or the clues to a nearby disease. A number of normal variants of the ribs should be kept in mind to avoid mistaking them for an abnormality [2]. Some common congenital anomalies and deformities of the ribs are the developmental fusion of two or more ribs, the articulation or bridge formation between two ribs, and the bifid rib; and their incidence varies between 0.15% and 3.4% [1, 3]. These anomalies are mostly faced as isolated findings occurring sporadically, and their clinical significances are very rare [2].

Etter et al. [4] investigated chest radiographs of 40000 healthy young male military recruits, and found congenital costal anomalies in 544 men (1.4%). The most common anomaly detected in that study was a bifid rib (0.6%) which most often involved the fourth rib. In this anomaly, the anterior portion of the rib is duplicated. Rib fusion or bone bridging occurred in 0.3% of the patients and mostly involved the first and second rib. The fusion may be partial, involving posterior or anterior portions of the ribs, or may be complete. In the series of Steiner et al. [5] (n=38105), the prevalences of bifid ribs and fused ribs were 0.01%, and the results in the study of Pionnier et al. [6] (n=10000) were 1.07% and 0.39%, respectively.

There is little information in the literature about the clinical significance of bifid ribs. Gorlin-Gotz syndrome (basal cell nevus syndrome) is a multisystem disorder with cutaneous manifestations which include multiple basal cell carcinomas, epidermal cysts, palmoplantar pits, subcutaneous calcifications, and costal anomalies such as bifid, sprayed, or synostotic ribs [7]. Wattanasirichaigon et al. [3] suggested that rib anomalies can occur in isolation or as a part of vertebral malformations. He investigated rib defects in 47 patients with multiple malformations and reported rib fusion in %72, and bifid ribs in 28% of the patients. Rib fusion and bifid rib anomalies are rarely clinically significant and most patients are asymptomatic. The fusion of the first and the second ribs may cause thoracic outlet syndrome [8].

Each anatomic variation concerning the ribs in the patients mentioned in this paper were detected incidentally, after a chest X-ray taken for another reason. Detailed physical examination and investigation of the medical history of these patients revealed that these variations were not affecting the patients' health. They did not have any signs and symptoms of a multisystem disorder, or another congenital anomalies. Therefore, it was concluded for all the patients that these findings were not a part of another disorder or anomalies.

Fused or bifid ribs may be isolated findings or part of some congenital anomalies. Although most are sporadic, a thorough physical examination should be performed on patients with bifid or fused rib. As a radiologist and clinician, we should be familiar with these anomalies to distinguish them from true rib diseases, and to avoid unnecessary concern and further evaluation.

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